

The Flora of Doi Sutep, Siam

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In northern Siam at the end of the railway, is the town of Chiangmai. Until recently, this region could only be reached after a journey of many weeks, but now the visitor travels comfortably and quickly in the train from Bangkok. In Chiangmai, there is a group of American missionaries, who maintain an excellent hospital. We (Mrs. Cockerell, Miss Alice Mackie and I) were kindly invited to stay with Dr. and Mrs. James W. McKean, with the promise of a trip up the great mountain, Doi Sutep. Dr. McKean is in charge of the leper hospital, a model institution which owes its existence and its many admirable features to his skill and industry. Here and elsewhere the work of the medical missionaries in Siam is of great value and deserves hearty support. It is now supplemented by the various activities of the Rockefeller commission, which during the year before our visit gave no less than 186,000 treatments for hookworm, to nearly as many different people. American activities abroad are sometimes criticisable, but in Siam they appear to be and to have been in the past, entirely praiseworthy. One consequence of this is that the botanist or zoologist travels where he will, in peace and security, with the good will of the people. Even the Buddhist priests are friendly, and on one occasion we were permitted to camp in a Buddhist temple, sleeping none the worse for the placid figure of Buddha looking down on us during the night.

When the day came, early in February, to ascend Doi Sutep, we were taken in an automobile to the foot of the mountain, where we found awaiting us a group of men with chairs on poles, to convey us up the steep slopes. We were a little inclined to feel superior to this luxurious mode of transit and did in fact do a good deal of walking, but I for one was often glad of the assistance, and found it necessary. Doi Sutep rises to an altitude of about 5,500 feet above sea level, high enough to have elements of the temperate flora on the top. I was mainly concerned with insects, and had not intended to collect the plants, which have been quite fully investigated by others. Yet there were so many interesting species of plants that I took some papers and gathered more or less fragmentary specimens of many, which were

nearly all named for me later by Dr. A. Kerr, the government botanist in Bangkok. Near the foot of the mountains we met with the beautiful *Mussaenda hossei* Craib, with large white calyx lobes. This shrub was described from Doi Sutep: the genus extends to tropical Africa in one direction, and Polynesia in the other. On the trail we picked up the very large flowers of the Bignoniaceous *Markhamia stipulata* Seem. Elaeocarpaceae were represented by *Elaeocarpus robertsonii* Gamble, a very fine thing. The Convolvulaceous *Porana racemose* Roxb., a smallish delicate form, with flowers in clusters was especially interesting to me because I had collected fossil *Porana* at Florissant, but had never seen a living specimen before. The Acanthaceae were rather conspicuous, including the large flowered *Thunbergia laurifolia* Lindl. and *Strobilanthes pentstemonoides* T. Andr., and *Daedalacanthus tetragonus* T. Andr. (*Eranthemum tetragonum*), a rather phlox-like plant with pink flowers and long slender opposite leaves.

In a wet place near the Queen's Garden, about half way up, the small pink flowered spikes of the Lythraceous *Rotala rotundifolia* Koehne were conspicuous. I did not see it anywhere else. Large oaks in the gulches on the slopes proved to be *Quercus semiserrata* Roxb. I picked up an oak-coccid of the genus *Kermes*, the genus new to Siam, and the species probably undescribed. The mountain is famous for its oaks; I found ten listed in the literature, and Dr. Kerr tells me there are still others. Four species (*Q. garrettiana* Craib, *Q. kerrii* Craib, *Q. kingiana* Craib and *Q. sootepensis* Craib) were based on Doi Sutep specimens. Of the others, one ranges to Java and Formosa (the nut is edible and it may have been carried about), but most extend into Burma or Assam. There are also three species of *Castanopsis* on the mountain. Malvaceae were represented by *Thespesia lampas* Dalz. & Gibs., the name apparently referring to the rather lantern-like five parted fruit. Another five parted fruit belonged to the genus *Schima* (*S. wallichii* Choisy or *S. brevipes* Craib), one of the Ternstraemiaceae,—also belonging to the latter family is *Anneslea fragrans* Wall, with fine dark red flowers. As might be expected, Leguminosae were common; those collected included *Crotalaria ferruginea* Grah., with yellow flowers; the large flowered *Bauhinia variegata* L.; the creeping *Dolichos subcarnosus* Prain; *Lespedeza pinetorum* Kurz, with long three-part-

ed leaves, pale beneath; and *Desmodium floribundum* Sweet (*Meibomia floribunda*). The genera are very familiar to American botanists. *Bauhinia* is everywhere conspicuous in the Siamese jungles, with several species. Similarly, the Compositae have for the most part a familiar aspect. I obtained *Vernonia volkamerifolia* D. C., with large heads or clusters of heads; *Ageratum conyzoides* L., a well-known tropical weed also found in Panama; *Anaphalis margaritacea* B&H, (I suppose it was the variety *cinnamomea* Clarke); *Senecio nagensium* C. B. Cl. var. *lobbii* Hook. f., a robust species with large leaves, pale below; *Lagera flava* Benth., with yellow flowers; *Bidens pilosa* L., a cosmopolitan weed with white rays, a *Gynura* with white pappus, and some others. There was a *Vernonia* with dark-tipped involucral bracts, new to Dr. Kerr, and possibly undescribed. On and about the summit were many ferns, *Pteridium aquilinum* and species of *Pteris*, *Cheilanthes* and *Drynaria*. Two grasses, *Imperata arundinacea* Cyr., with a long spike, and the tall *Pollinia grata* Hack., were especially conspicuous. The flora on the summit included a number of species characteristic of temperate regions. *Rubus kerrii* Rolfe, with leaves pale below, was originally described from this locality. Two species of *Polygonum*, one a Persicaria-like species referred to *P. chinensis* L. var. and the other a large robust plant doubtfully determined as *P. damrongianum* Hosseus. Some of the *Polygonum* was heavily infested with the fungus *Ustilago utriculosa*, for the name of which I am indebted to Dr. Seaver. I was very much pleased to find *Viola serpens* Wall., with pale flowers. It was originally described from Nepal. There are three other species of *Viola* in the Siamese flora. My wife collected the orchid *Eulophia nuda* Lindl. on the summit. The large *Lilium nepalense* D. Don, common on the summit, had gone to seed, but we collected seeds and dug up a bulb which was sent to Kew. This species flowered in the garden of Trinity College, Dublin in 1923. A quite different liliaceous plant was *Dianella ensifolia* Red.; I later (April 15) saw the genus again in Australia, finding *D. tasmanica* in Upper Fern Tree Gully, Victoria. The slender *Impatiens violiflora* Hook. f., with knobbed glands, served to remind us of the famous botanist who specialized on *Impatiens* when over 90 years old. A very interesting and curious plant of the summit, very small, with a long red corolla, proved to be the Gesneriaceous

Aeschynanthus persimilis Craib (*Trichosporum persimile*). There were two Labiatae of the genus *Pogostemon*, with long spikes. One is *P. glaber* Benth., and the other *P. fraternus* Miq. A species of this genus is an important perfume plant in India, and I noticed that *P. glaber* was strongly scented. A parasitic plant without chlorophyll was referred doubtfully to *Chierostylis macrantha* Schl. The pines growing on the summit, with long leaves in threes, belong to *Pinus khasya* Royle. I am not quite sure that they had not been planted, as they were in the immediate vicinity of the buildings used by the missionaries as a summer resort. A large species of *Commelina* grows on the summit. The flora certainly has rather strong Himalayan affinities, but Craib remarks on the resemblances to the flora of Yunnan. There are species in common with Mengtze, where Henry collected. The Doi Sutep flora has been investigated by a number of botanists and lists of the species are given by Professor W. G. Craib, of the University of Aberdeen. The number of new species described from the mountain is amazing. I have noted over 70, and my list is not nearly complete. This include members of such genera as *Mussaenda* (three) *Passiflora*, *Gardenia*, *Cephaëlis*, *Ipomoea*, *Loranthus*, (two), *Antidesma* (two), *Olea* (two), *Jasminum*, *Rubia*, *Styrax*, *Ardisia*, *Thunbergia*, *Utricularia* (two), *Clerodendron*, *Elaeocarpus*, *Arisaema* (three), *Smilax*, *Zingiber* (three), *Globba* (five), *Ophiopogon* (two) etc, etc. There are three species of palms on the mountain, belonging to *Wallichia*, *Calamus* and *Plectocomia*. There is also a Pandanus. Richly represented families are Scitaminaceae, with 29 species; Liliaceae, with 16 species; Commelinaceae, with 18 species, and Araceae, also with 18.

Thus Doi Sutep is a veritable paradise for botanists, and is, I suppose the best locality in Siam which can be visited without much trouble. With such a flora naturally goes a similarly varied fauna, which, at least among the insects, will furnish innumerable novelties. The cryptogamic flora must also be very interesting, and except for the vascular species, is hardly known.

There is some variation in the spelling of Doi Sutep. Craib formerly wrote Doi Sootep. Hosseus (Bot. Jahrb. 1908) has Doi Sutap. R. le May in his excellent book on Siam, has Doi Sũthép. Doi means mountain.

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